AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A data multiplexing network system including:

a wavelength division multiplexing network;

a first wavelength multiplexing function unit for setting a plurality of different wavelengths which correspond to a plurality of different service classes, respectively, and for mapping each of a plurality of packets entering the wavelength division multiplexing network into a correspondent-wavelength corresponding to a particular one of the plurality of different service classes to which said packet belongs, and for multiplexing said correspondent-wavelengths for said plurality of different service classes for a data transmission through said wavelength division multiplexing network; and

a second wavelength multiplexing function unit for receiving each correspondent-wavelength and for fetching a packet therefrom,

wherein said first wavelength multiplexing function unit further includes:

a plurality of ports for receiving said plurality of packets into the wavelength division multiplexing network;

a first packet interface unit for receiving said plurality of packets from said plurality of ports;

a first service class specifying unit for receiving said plurality of packets from said first packet interface unit and for specifying the service class to which each of said plurality of packets belongs;

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a first wavelength mapping unit for receiving said plurality of packets from said first service class specifying unit and for mapping each of said plurality of packets at a correspondent-wavelength corresponding to the specified service class; and

a first wavelength division multiplexing network interface for receiving said correspondent-wavelengths from said first wavelength mapping unit and for multiplexing said correspondent-wavelengths; and

wherein each of said plurality of packets includes packet identifying information which identifies said packet,

wherein said first service class specifying unit further includes: a service class-correspondent table for defining correspondences between said service classes and said packet identifying information, and

wherein said first service class specifying unit uses said service class-correspondent table, based on said packet identifying information, so as to specify the service class corresponding to said packet identifying information.

2. (Cancelled).

3. (Currently Amended) The data multiplexing network system as claimed in claim [[2]] 1, wherein said second wavelength multiplexing function unit further includes:

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a second wavelength division multiplexing network interface for demultiplexing a multiplexed signal transmitted through said wavelength division multiplexing network into said correspondent-wavelengths;

a second wavelength mapping unit for receiving said correspondent-wavelengths from said second wavelength division multiplexing network interface and for fetching said packets from said correspondent-wavelengths;

a second service class specifying unit for receiving said packets from said second wavelength mapping unit and for specifying an appropriate output port for each of said packets, and for adding output port information to each packet; and

a second packet interface unit for receiving each packet with said output port information and for sending said packet to the one of said plurality of ports identified by said output port information.

4. (Currently Amended) The data multiplexing network system as claimed in claim 3,

wherein said first service class specifying unit adds ~~an identifier~~ the packet identifying information to each packet, and

wherein said second service class specifying unit also specifies said output port based on said output port information of each packet.

5. (Currently Amended) The data multiplexing network system as claimed in claim 3, wherein said second service class specifying unit also specifies said output port based on ~~the~~ packet ~~specifying~~ identifying information included in each packet.

6. (Currently Amended) The data multiplexing network system as claimed in claim 5, wherein said packet ~~specifying~~ identifying information comprises a packet header included in each packet.

7. (Currently Amended) The data multiplexing network system as claimed in claim [[2]] 1,

wherein said first packet interface unit adds input port information to each of said plurality of packets as received from said plurality of ports, said input port information identifying the port through which said packet has been received,

wherein said first service class specifying unit further includes: a service class-correspondent table for defining correspondences between said service classes and said plurality of ports, and

wherein said first service class specifying unit uses said service class-correspondent table, based on said input port information, so as to specify the service class corresponding to each port.

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8. (Cancelled).

9. (Original) The data multiplexing network system as claimed in claim 1, wherein said plurality of different service classes include a best effort class and a perfect band guarantee class.

10. (Original) The data multiplexing network system as claimed in claim 1, wherein at least one of said first and second wavelength multiplexing function units further includes a shaper for controlling packet traffics in a plurality of wavelength bands.

11. (Currently Amended) A wavelength multiplexer including:

a first wavelength multiplexing function unit for setting a plurality of different wavelengths which correspond to a plurality of different service classes, respectively, and for mapping each of a plurality of packets entering a wavelength division multiplexing network into a correspondent-wavelength which corresponds to a particular one of the plurality of different service classes to which said packet belongs, and for multiplexing said correspondent-wavelengths for said plurality of different service classes for a data transmission through said wavelength division multiplexing network,

wherein said first wavelength multiplexing function unit further includes:

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a plurality of ports for receiving said plurality of packets into the wavelength division multiplexing network;

a first packet interface unit for receiving said plurality of packets from said plurality of ports;

a first service class specifying unit for receiving said plurality of packets from said first packet interface unit and for specifying the service class to which each of said plurality of packets belongs;

a first wavelength mapping unit for receiving said plurality of packets from said first service class specifying unit and for mapping each of said plurality of packets at a correspondent-wavelength corresponding to the specified service class; and

a first wavelength division multiplexing network interface for receiving said correspondent-wavelengths from said first wavelength mapping unit and for multiplexing said correspondent-wavelengths,

wherein each of said plurality of packets includes packet identifying information which identifies said packet, wherein said first service class specifying unit further includes: a service class-correspondent table for defining correspondences between said service classes and said packet identifying information, and

wherein said first service class specifying unit uses said service class-correspondent table, based on said packet identifying information service class corresponding to said packet identifying information.

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12. (Cancelled).

13. (Currently Amended) The wavelength multiplexer as claimed in claim [[12]] 11, further including a second wavelength multiplexing function unit for receiving each correspondent-wavelength and for fetching a packet therefrom.

14. (Previously Presented) The wavelength multiplexer as claimed in claim 13, wherein said second wavelength multiplexing function unit further includes:

a second wavelength division multiplexing network interface for demultiplexing a multiplexed signal transmitted through said wavelength division multiplexing network into said correspondent-wavelengths;

a second wavelength mapping unit for receiving said correspondent-wavelengths from said second wavelength division multiplexing network interface and for fetching said packets from said correspondent-wavelengths;

a second service class specifying unit for receiving said packets from said second wavelength mapping unit and for specifying an appropriate output port for each of said packets, and for adding output port information to each packet; and

a second packet interface unit for receiving each packet with said output port information and for sending said packet to the one of said plurality of ports identified by said output port information.

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15. (Currently Amended) The wavelength multiplexer as claimed in claim 14,

wherein said first service class specifying unit adds <u>the packet identifying</u> <u>information</u> to each packet, and

wherein said second service class specifying unit also specifies said output port based on said output port information of each packet.

16. (Currently Amended) The wavelength multiplexer as claimed in claim 14, wherein said second service class specifying unit also specifies said output port based on <u>the</u> packet ~~specifying~~ <u>identifying</u> information included in each packet.

17. (Currently Amended) The wavelength multiplexer as claimed in claim 16, wherein said packet ~~specifying~~ <u>identifying</u> information comprises a packet header included in each packet.

18. (Currently Amended) The wavelength multiplexer as claimed in claim [[12]] <u>11,</u>

wherein said first packet interface unit adds input port information to each of said plurality of packets as received from said plurality of ports, said input port information identifying the port through which said packet has been received,

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wherein said first service class specifying unit further includes: a service class-correspondent table for defining correspondences between said service classes and said plurality of ports, and

wherein said first service class specifying unit uses said service class-correspondent table, based on said input port information, so as to specify the service class corresponding to each port.

19. (Cancelled).

20. (Original) The wavelength multiplexer as claimed in claim 11, wherein said plurality of different service classes include a best effort class and a perfect band guarantee class.

21. (Original) The wavelength multiplexer as claimed in claim 11, wherein at least one of said first and second wavelength multiplexing function units further includes a shaper for controlling packet traffics in a plurality of wavelength bands.

22. (Currently Amended) A data multiplexing transmission method including:

setting a plurality of different wavelengths which correspond to a plurality of different service classes, respectively;

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mapping each of a plurality of packets entering a wavelength division multiplexing network into a correspondent-wavelength which corresponds to a particular one of the plurality of different service classes to which said packet belongs; and

multiplexing said correspondent-wavelengths for said plurality of different service classes for a data transmission through said wavelength division multiplexing network,

wherein each of said plurality of packets includes packet identifying information which identifies said packet, and

wherein a retrieval is made with reference to a service class-correspondent table defining correspondences between said service classes and said packet identifying information, based on said packet identifying information, so as to specify the service class corresponding to said packet identifying information.

23. (Previously Presented) The data multiplexing transmission method as claimed in claim 22, further including:

receiving said correspondent-wavelength into said wavelength division multiplexing network; and

fetching a packet from said correspondent-wavelength.

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24. (Previously Presented) The data multiplexing transmission method as claimed in claim 23, further including the steps of:

demultiplexing a multiplexed signal transmitted through said wavelength division multiplexing network into said correspondent-wavelengths for fetching said packets from said correspondent-wavelengths;

specifying an output port for each of said packets;

adding the specified output port information to each packet; and

sending each packet to an identified one of said plurality of ports, identified by said output port information.

25. (Currently Amended) The data multiplexing transmission method as claimed in claim 24,

wherein ~~an identifier~~ the packet identifying information is added to each packet, and

wherein said output port is specified based on said output port information of each packet.

26. (Currently Amended) The data multiplexing transmission method as claimed in claim 24, wherein said output port is also specified based on the packet identifying information included in each packet.

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27. (Currently Amended) The data multiplexing transmission method as claimed in claim 26, wherein said packet ~~specifying~~ <u>identifying</u> information comprises a packet header included in each packet.

28. (Previously Presented) The data multiplexing transmission method as claimed in claim 22,

wherein input port information is added to each of said plurality of packets as received from a plurality of ports, said input port information identifying the port through which said packet has been received, and

wherein a retrieval is made with reference to a service class-correspondent table for defining correspondences between said service classes and said plurality of ports, based on said input port information, so as to specify the service class corresponding to each port identified by said input port information.

29. (Cancelled).

30. (Original) The data multiplexing transmission method as claimed in claim 22, wherein said plurality of different service classes include a best effort class and a perfect band guarantee class.

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